



**University of
Zurich**^{UZH}

**Zurich Open Repository and
Archive**

University of Zurich
University Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2013

Fair allocation of multiple resources using a non-monetary allocation mechanism

Poullie, Patrick ; Stiller, Burkhard

Abstract: The fair allocation of scarce resources is relevant to a wide field of applications. For example, cloud resources, such as CPU, RAM, disk space, and bandwidth, have to be shared. This paper presents a mechanism to find fair allocations of multiple divisible resources, which, contrary to other mechanisms, is applicable to but not limited to the example above. Wide applicability of the mechanism is achieved by designing it (1) to scale with the number of consumers and resources, (2) to allow for arbitrary preference functions of consumers, and (3) to not rely on monetary compensation. The mechanism uses a mathematical definition of greediness to balance resources consumers receive and thereby to compute a fair allocation.

DOI: https://doi.org/10.1007/978-3-642-38998-6_6

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-89240>

Conference or Workshop Item

Published Version

Originally published at:

Poullie, Patrick; Stiller, Burkhard (2013). Fair allocation of multiple resources using a non-monetary allocation mechanism. In: 7th International Conference on Autonomous Infrastructure, Management and Security 2013 (AIMS 2013), Barcelona, Spain, 25 June 2013 - 28 June 2013. Springer, 45-48.

DOI: https://doi.org/10.1007/978-3-642-38998-6_6

The fair allocation of scarce resources is relevant to a wide field of applications. For example, cloud resources, such as CPU, RAM, disk space, and bandwidth, have to be shared. This paper presents a mechanism to find fair allocations of multiple divisible resources, which, contrary to other mechanisms, is applicable to but not limited to the example above. Wide applicability of the mechanism is achieved by designing it (1) to scale with the number of consumers and resources, (2) to allow for arbitrary preference functions of consumers, and (3) to not rely on monetary compensation. The mechanism uses a mathematical definition of greediness to balance resources consumers receive and thereby to compute a fair allocation.